

Trend Study14-12-99

Study site name: Shingle Mill .

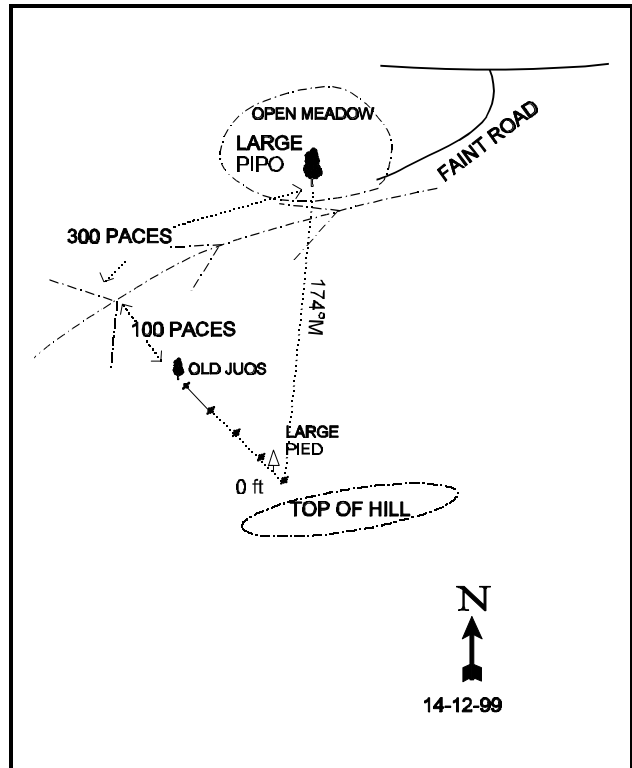
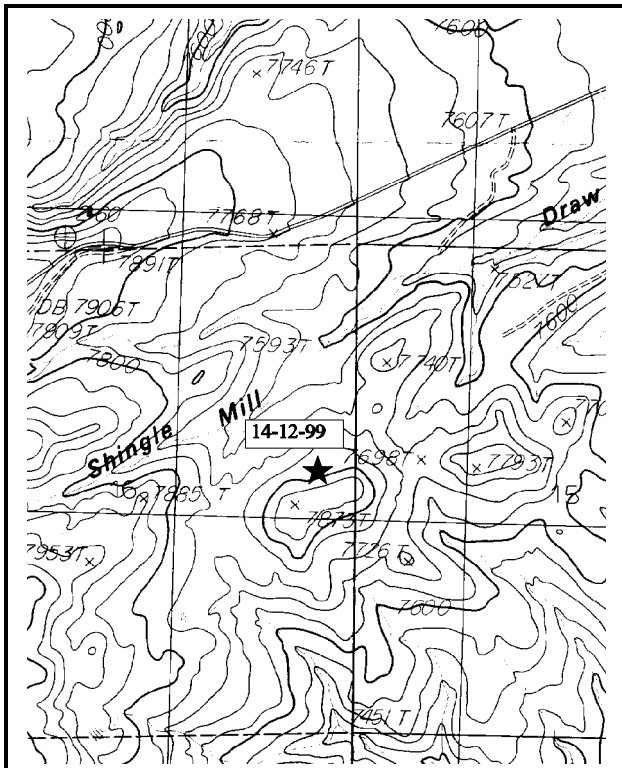
Range type: Mixed Mountain Brush .

Compass bearing: frequency baseline 278°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1(11 and 95 ft), line 2(34 ft), line 3(59 ft), line 4(71ft).

LOCATION DESCRIPTION

Go 3.5 miles from the junction of Blue Mountain and South Creek Roads. Turn left on Forest Service Road #261 and continue 0.35 miles to a fork. Turn right on a faint road and go 0.3 miles to a fork. Bear left for 0.1 miles to a large ponderosa pine in a flat. Park here and take a bearing of 174°M. The site is on a hillside about ½ mile away. The 0 foot stake is uphill, with the baseline running down at 278°M.



Map name: Abajo Peak

Diagrammatic Sketch

Township 34S , Range 23E , Section 16 .

UTM 4187068.532 N, 641390.437 E

DISCUSSION

Trend Study No. 14-12 (35-12)

Shingle Mill is a new trend study site established in 1994. It samples a mixed mountain brush type west of Monticello, considered critical deer winter range by Forest Service personnel. The area is grazed as part of the Lakes allotment. It is grazed by 241 head of cattle from July 1 to October 15. There was some elk use on the site, but deer use was about three times that of elk. Pellet group data from 1999 estimate 40 deer days use/acre (99 ddu/ha), 7 elk days use/acre (17 edu/ha), and 9 cow use days/acre (22 cdu/ha). Much of the deer and elk sign was recent, while the cow pats appear to be mostly from last season. This site is similar to site 14-3 (35-3 Gold Queen Basin), but more open with scattered Ponderosa pine and oak with mixed mountain browse on a moderate slope (25-30%) and a south to east aspect. The elevation of the site is 7,500 feet.

The soil on the site is quite variable in depth as illustrated by the presence of both black sagebrush and mountain big sagebrush which characteristically are adapted to different depths of soil. There is also a high amount of large rock on the surface and within the top 4 inches of the soil profile. However, estimated effective rooting depth is moderately deep at nearly 19 inches. Texture of the soil is a clay with a neutral pH (7.3). Parent material appears to be granite, but there is also some shale present on the site. There has been great deal of erosion in the past as evidenced by the large gullies in the bottom of the drainage. There is some soil pedestaling evident on the site, but overall erosion on the slope appears minimal.

The site supports several useful and preferred browse species including; serviceberry, mountain big sagebrush, true mountain mahogany, and squaw-apple. Other species present include, black sagebrush, dwarf rabbitbrush, Gambel oak, and snowberry. Mountain big sagebrush, true mountain mahogany, and squaw-apple are the key species on the site. They contribute nearly half of the shrub cover and show moderate to heavy use. There is a mix of mountain big sagebrush and black sagebrush on the slope. Black sagebrush occurs on the steeper portions of the slope in isolated patches. It had a density of only 120 plants/acre in 1999. It appears that there was some problems in identification between the two species of sagebrush in 1994. Mountain big sagebrush currently numbers 2,800 plants/acre. Use is mostly moderate, vigor good, and percent decadence low at 12%. True mountain mahogany displayed moderate to heavy use in 1994 and 1999. Density has declined slightly, but vigor is generally good and decadence is low. Squaw-apple has declined in density since 1994. Utilization is moderate to heavy, although vigor is normal and percent decadency low. Reproduction is poor with only a few young plants sampled in 1994 and 1999. Serviceberry also shows some moderate to heavy use, however it only provides 3% of the browse cover with a stable density of about 840 plants/acre in 1999.

Some Gambel oak occurs in isolated clones near the top of the ridge. Some plants are tall and partly unavailable with use concentrated along the edges. Dwarf rabbitbrush and snowberry are abundant and mostly unutilized. They both have low decadence and show normal vigor.

The herbaceous understory is diverse and abundant providing half of the vegetation cover on the site in 1999. Grasses currently account for 42% of the herbaceous cover. Mutton bluegrass is most abundant followed by prairie junegrass, and subalpine needlegrass. These species provided 57% of the grass cover in 1994 and 80% in 1999. Forbs are also diverse with 20 species encountered in 1999. Most species are uncommon however, with 3 species, weedy milkvetch, silvery lupine, and mat penstemon, providing 91% of the forb cover in 1994 and 93% in 1999. Weedy milkvetch and silvery lupine are poisonous to livestock and considered increasers under grazing pressure.

1994 APPARENT TREND ASSESSMENT

The soil appears well protected and erosion is minimal. The preferred browse species, serviceberry, mountain big sagebrush, true mountain mahogany, and squaw-apple, are moderately to heavily utilized, although

generally in good vigor with low decadence. The herbaceous understory is abundant and diverse. Mutton bluegrass is most abundant, providing 45% of the grass cover. Carex, prairie Junegrass, and subalpine needlegrass are also abundant. The forb composition is poor however, with three species, weedy milkvetch, silvery lupine and mat penstemon, providing 91% of the forb cover. Weedy milkvetch and silvery lupine are poisonous to livestock. Trend indicators in the future will depend on how these species change in frequency in the future.

1999 TREND ASSESSMENT

Trend for soil is stable with similar relative percent cover values for bare ground. Litter cover increased slightly, while rock and pavement cover remained similar. There is some evidence of erosion on the site, yet it appears localized. Trend for the key browse species, mountain big sagebrush, true mountain mahogany, and squaw-apple appear stable. Utilization is moderate to heavy but vigor is generally good with percent decadence low. Trend for the herbaceous understory is up with an increase in the sum of nested frequency of grasses and forbs. Composition of forbs is still undesirable however. Nested frequency of slender wheatgrass, prairie Junegrass, Kentucky bluegrass, and subalpine needlegrass increased significantly. Frequency of silvery lupine also increased significantly, although both weedy milkvetch and mat penstemon increased, but not significantly. Cover of both grasses and forbs doubled since 1994.

TREND ASSESSMENT

soil - stable

browse - stable

herbaceous understory - up, but forbs dominated by poisonous species

HERBACEOUS TRENDS --

Herd unit 14 , Study no: 12

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'94	'99	'94	'99	'94	'99
G	Agropyron smithii	5	20	3	9	.01	.12
G	Agropyron trachycaulum	40	*57	13	23	.82	.75
G	Carex spp.	23	33	10	15	1.23	.93
G	Koeleria cristata	33	*82	14	31	.51	3.25
G	Oryzopsis hymenoides	13	9	8	3	.09	.01
G	Poa fendleriana	241	254	74	84	3.86	6.80
G	Poa pratensis	7	*43	3	18	.16	1.04
G	Sitanion hystrix	91	*29	37	15	.72	.46
G	Stipa columbiana	17	*104	7	32	.52	3.16
G	Stipa comata	-	6	-	2	-	.06
G	Stipa lettermani	35	-	16	-	.66	-
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		505	637	185	232	8.59	16.62
Total for Grasses		505	637	185	232	8.59	16.62
F	Achillea millefolium	24	20	7	7	.22	.57
F	Agoseris glauca	4	-	2	-	.01	-

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'94	'99	'94	'99	'94	'99
F	Allium spp.	7	*-	4	-	.02	-
F	Arabis spp.	4	-	2	-	.01	-
F	Artemisia ludoviciana	10	3	2	1	.01	.03
F	Astragalus miser	154	207	58	77	5.65	13.08
F	Castilleja linariaefolia	5	4	2	1	.03	.03
F	Calochortus nuttallii	2	*13	1	5	.00	.31
F	Cirsium spp.	4	1	2	1	.01	.00
F	Crepis acuminata	2	13	1	6	.00	.08
F	Cymopterus spp.	1	3	1	1	.00	.00
F	Eriogonum elatum	2	-	1	-	.00	-
F	Erigeron spp.	4	4	3	2	.01	.03
F	Hymenoxys acaulis	9	13	4	5	.09	.05
F	Lathyrus lanszwertii	4	-	1	-	.00	-
F	Lomatium dissectum	14	25	5	13	.17	.21
F	Lupinus argenteus	39	*46	20	20	1.99	3.58
F	Penstemon pachyphyllus	3	-	2	-	.01	-
F	Petradoria pumila	-	*7	-	3	-	.09
F	Penstemon caespitosus	144	165	48	57	2.26	4.53
F	Phlox longifolia	72	*52	29	22	.19	.16
F	Senecio neomexicanus	3	1	1	1	.00	.00
F	Taraxacum officinale	-	28	-	8	-	.14
F	Tragopogon dubius	3	2	1	2	.00	.01
F	Trifolium gymnocarpon	1	3	1	1	.03	.00
F	Zigadenus paniculatus	-	10	-	5	-	.02
Total for Annual Forbs		0	0	0	0	0	0
Total for Perennial Forbs		515	620	198	238	10.78	22.98
Total for Forbs		515	620	198	238	10.79	22.98

* Indicates significant difference at % = 0.10

BROWSE TRENDS --

Herd unit 14 , Study no: 12

Type	Species	Strip Frequency		Average Cover %	
		'94	'99	'94	'99
B	Amelanchier utahensis	24	17	.72	1.07
B	Artemisia nova	30	5	4.34	.56
B	Artemisia tridentata vaseyana	38	64	5.67	12.10
B	Cercocarpus montanus	27	25	2.77	2.91
B	Chrysothamnus depressus	51	38	1.68	2.32
B	Gutierrezia sarothrae	5	2	.01	.03
B	Juniperus osteosperma	0	1	-	-
B	Opuntia spp.	0	0	-	-
B	Peraphyllum ramosissimum	30	24	3.87	3.62
B	Pinus edulis	0	3	.42	.69
B	Quercus gambelii	0	24	4.10	7.50
B	Symphoricarpos oreophilus	77	71	5.64	9.85
Total for Browse		282	274	29.27	40.67

CANOPY COVER --

Herd unit 14 , Study no: 12

Species	Percent Cover '99
Pinus edulis	2

BASIC COVER --

Herd unit 14 , Study no: 12

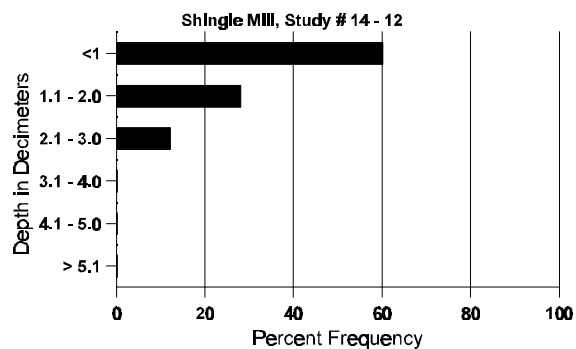
Cover Type	Nested Frequency		Average Cover %	
	'94	'99	'94	'99
Vegetation	407	499	47.95	66.71
Rock	307	317	17.14	17.51
Pavement	230	311	2.46	5.48
Litter	462	545	25.22	40.04
Cryptogams	18	55	.28	.95
Bare Ground	351	401	17.34	22.88

SOIL ANALYSIS DATA --

Herd Unit 14, Study # 12, Study Name: Shingle Mill

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
18.7	51.8 (17.8)	7.3	26.9	20.6	52.6	3.4	5.6	86.4	0.4

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 14 , Study no: 12

Type	Quadrat Frequency		Pellet Transect Days Use/Acre (ha)
	'94	'99	'99
Rabbit	-	4	N/A
Elk	5	-	7 (17)
Deer	17	27	39 (96)
Cattle	-	-	9 (22)

BROWSE CHARACTERISTICS --

Herd unit 14 , Study no: 12

Table 14, Study No. 12																			
A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total	
		1	2	3	4	5	6	7	8	9	1	2	3	4					
Amelanchier utahensis																			
S	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2	
Y	94	8	-	-	3	-	1	-	-	-	12	-	-	-	240			12	
	99	11	5	-	3	-	-	-	-	-	17	-	2	-	380			19	
M	94	20	-	-	4	1	1	-	-	-	26	-	-	-	520	12	15	26	
	99	13	-	1	1	1	5	-	-	-	19	1	1	-	420	17	20	21	
D	94	2	-	-	3	-	-	-	-	-	4	1	-	-	100			5	
	99	-	1	-	-	-	1	-	-	-	-	-	-	2	40			2	
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2	
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>					
'94		02%				05%				00%				- 2%					
'99		17%				17%				12%									
Total Plants/Acre (excluding Dead & Seedlings)														'94	860	Dec:	12%		
														'99	840		5%		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia nova																		
S	94	34	-	-	-	-	-	2	-	-	36	-	-	-	720		36	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	94	49	-	-	1	-	-	-	-	-	48	-	2	-	1000	17 27	50	
	99	5	-	-	-	-	-	-	-	-	5	-	-	-	100	15 23	5	
D	94	13	-	-	-	-	-	-	-	-	12	-	-	1	260		13	
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	160		8	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		00%			00%			05%			-90%							
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	1260	Dec:	21%			
												'99	120		17%			
Artemisia tridentata vaseyana																		
S	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
Y	94	6	-	-	-	-	-	-	-	-	6	-	-	-	120		6	
	99	12	4	-	3	-	-	-	-	-	19	-	-	-	380		19	
M	94	30	3	3	-	-	-	-	-	-	36	-	-	-	720	20 27	36	
	99	88	16	-	-	-	-	-	-	-	104	-	-	-	2080	19 34	104	
D	94	16	-	-	-	-	-	-	-	-	11	-	-	5	320		16	
	99	15	2	-	-	-	-	-	-	-	14	-	-	3	340		17	
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	380		19	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		05%			05%			09%			+59%							
'99		16%			00%			02%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	1160	Dec:	28%			
												'99	2800		12%			
Cercocarpus montanus																		
S	94	1	-	-	1	-	-	-	-	-	2	-	-	-	40		2	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	94	3	2	-	1	-	-	-	-	-	6	-	-	-	120		6	
	99	7	2	-	1	-	-	-	-	-	10	-	-	-	200		10	
M	94	17	5	4	1	13	2	-	-	-	42	-	-	-	840	20 22	42	
	99	4	4	17	-	1	2	-	-	-	28	-	-	-	560	27 33	28	
D	94	-	-	-	-	1	2	-	-	-	3	-	-	-	60		3	
	99	1	-	3	-	-	1	-	-	-	1	-	-	4	100		5	
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		41%			16%			00%			-16%							
'99		16%			53%			09%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	1020	Dec:	6%			
												'99	860		12%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Chrysothamnus depressus																	
S	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	94	159	-	-	14	-	-	7	-	-	180	-	-	-	3600	5 9	180
	99	146	2	-	20	-	-	-	-	-	168	-	-	-	3360	4 8	168
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'94		00%			00%			00%			- 7%						
'99		01%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'94	3600	Dec:	-		
												'99	3360		-		
Gutierrezia sarothrae																	
M	94	6	-	-	-	-	-	-	-	-	6	-	-	-	120	8 8	6
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80	6 6	4
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'94		00%			00%			00%			-33%						
'99		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'94	120	Dec:	-		
												'99	80		-		
Juniperus osteosperma																	
D	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	99	1	-	-	-	-	-	-	-	-	-	-	-	1	20		1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'94		00%			00%			00%									
'99		00%			00%			100%									
Total Plants/Acre (excluding Dead & Seedlings)												'94	0	Dec:	0%		
												'99	20		100%		
Opuntia spp.																	
S	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'94		00%			00%			00%									
'99		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'94	0	Dec:	-		
												'99	0		-		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Peraphyllum ramosissimum																		
Y	94	4	2	-	-	-	-	-	-	-	6	-	-	-	120		6	
	99	2	1	-	-	-	-	-	-	-	3	-	-	-	60		3	
M	94	30	14	2	11	9	-	-	-	-	65	-	1	-	1320	18	27	
	99	14	17	3	1	-	6	-	-	-	41	-	-	-	820	18	25	
D	94	-	1	-	2	1	-	-	-	-	3	-	-	1	80		4	
	99	-	1	-	-	-	-	-	-	-	1	-	-	-	20		1	
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>					<u>Heavy Use</u>					<u>Poor Vigor</u>					<u>%Change</u>	
'94		19%					02%					02%					-65%	
'99		42%					20%					00%						
Total Plants/Acre (excluding Dead & Seedlings)												'94	2540	Dec:	3%			
												'99	900		2%			
Pinus edulis																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	2	-	-	1	-	-	-	-	-	2	-	1	-	60		3	
% Plants Showing		<u>Moderate Use</u>					<u>Heavy Use</u>					<u>Poor Vigor</u>					<u>%Change</u>	
'94		00%					00%					00%						
'99		00%					00%					33%						
Total Plants/Acre (excluding Dead & Seedlings)												'94	0	Dec:	-			
												'99	60		-			
Quercus gambelii																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	44	-	-	8	-	-	-	-	-	52	-	-	-	1040		52	
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	99	41	42	6	23	-	8	-	-	-	120	-	-	-	2400	25	21	
D	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	4	-	-	-	-	-	-	4	80		4	
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	360		18	
% Plants Showing		<u>Moderate Use</u>					<u>Heavy Use</u>					<u>Poor Vigor</u>					<u>%Change</u>	
'94		00%					00%					00%						
'99		24%					10%					02%						
Total Plants/Acre (excluding Dead & Seedlings)												'94	0	Dec:	0%			
												'99	3520		2%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Symphoricarpos oreophilus																		
S	94	4	-	-	-	-	-	1	-	-	5	-	-	-	100		5	
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
Y	94	39	-	-	3	-	-	3	-	-	45	-	-	-	900		45	
	99	16	-	-	1	-	-	-	-	-	17	-	-	-	340		17	
M	94	253	4	-	37	-	-	-	-	-	294	-	-	-	5880	13 21	294	
	99	235	8	-	26	-	-	-	-	-	269	-	-	-	5380	14 23	269	
D	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	99	2	-	-	-	-	1	-	-	-	2	-	-	1	60		3	
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		01%			00%			00%			-15%							
'99		03%			.34%			.34%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	6820	Dec:	1%			
												'99	5780		1%			